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"La Variegana (*Olethreutes variegana* Hb) ed I Suoi Parassiti." The observations to which especial attention should be called in this connection are likely to be unnoticed by students of polyembryony, and this especial note is therefore written.

One of the parasites of *Anarsia lineatella* is *Encyrtus variicornis* Nees, a species not known to the present writer, but which was retained in the genus *Encyrtus* by Gustav Mayr in his monograph of the European Encyrtidæ. The only previous record of its rearing seems to have been by Nees, from a cell of *Eumenes coarctata*, and it now appears from the observations of Sarra that it is altogether likely that Nees's specimen came not from the larva of the *Eumenes* but from some lepidopterous larva stored in the cell.

Sarra finds that the female parasite lays eggs in the egg of the *Anarsia*; that the parasite egg gives origin to a number of larvæ which live within the larva of the *Anarsia* after it has hatched, in just the same way as do the other related larvæ as studied by Marchal and Silvestri.

The second case is that of an unnamed species of *Copidosoma* reared from the larva of *Olethreutes variegana*. Here too, the parasite eggs are laid in the eggs of the *Olethreutes* and develop in its larvæ, 68 females and 80 males being reared from a single host larva.

These observations are of interest not only as adding two species to the list of polyembryonic forms, but, since *Encyrtus variicornis* has not previously been associated with the *Copidosoma* and *Leptomastix* group of Encyrtidæ, another genus is added to the list.

L. O. HOWARD

#### FOUNDATIONS OF MECHANICS

IN a communication to SCIENCE of October 4, I used the term "doctrinal function" in the sense of a consistent body of postulates and theorems containing one or more undefined elements, but considered apart from any of the various interpretations that could be placed on the undefined elements. The introduction of this useful term "doctrinal func-

tion" was erroneously attributed to Bertrand Russell. It should have been attributed to Professor C. J. Keyser<sup>1</sup> who is the originator.

With reference to the criticisms by Professor Franklin and MacNutt, in SCIENCE of November 8, of my communication of October 4, I do not merge "identification" and "measurement," in the paper mentioned, but state that I think the distinction between them valueless in the context referred to. So far as the relation between mass and force is concerned, I was merely following Messrs. Franklin and MacNutt's words: "We prefer to define mass *quantitatively* (*italics mine*) in terms of the operation of weighing by a balance scale." Nothing other than a quantitative definition would be of value in the equation  $f/a = m$ .

The fundamentally defining quantities need not be the same as those kept by the Bureau of Standards. Temperature—the real temperature—is defined by Carnot engines, but they do not keep Carnot engines in the Washington bureau. Chemical affinity as measured with the help of a Weston standard cell is another example of the same thing. The verification comes from the totality of physical experience. "An experiment," says Duhem,<sup>2</sup> can never condemn (or validate) an isolated hypothesis but only a doctrine (*ensemble théorique*.)

Of course, there are other kinds of physics besides force physics, and it would be erroneous to say that any of the discussions exhausted all there is in the ideas of force, mass, etc.

PAUL J. FOX

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#### TROPICAL ENERVATION

THE opinion is widespread, in northern climes, that a continuously warm climate, unbroken by sharp periodic changes, is enervating.

<sup>1</sup> See Keyser, "Human Worth of Rigorous Thinking," p. 254, and "Doctrinal Functions," *Jour. of Philos., Psychol. and Sci. Methods*, Vol. XV., p. 262.

<sup>2</sup> "La Théorie physique," Paris, 1906.